W. W. BATCHELDER.

Scintillating Attachment for Gas-Burners.

No. 204,286. Patented May 28, 1878.

Fig.1.

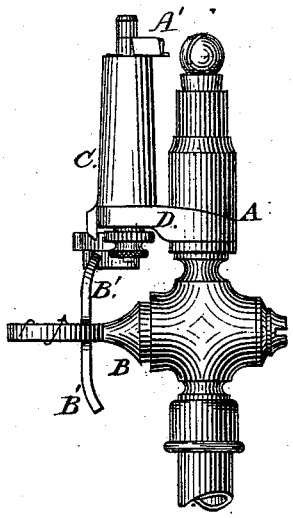


Fig.2.

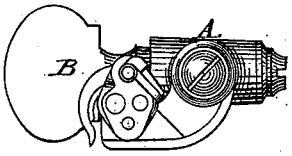
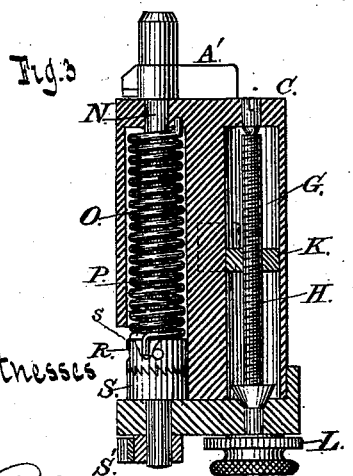


Fig.3



Witnesses

F. C. Brecht.

J. A. Rutherford.

Fig.4.

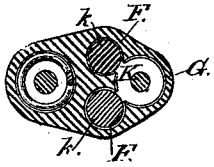
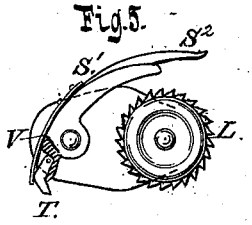


Fig.5.



Inventor

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Attorny

UNITED STATES PATENT OFFICE.

WILLIAM W. BATCHELDER, OF NEW YORK, N. Y.

IMPROVEMENT IN SCINTILLATING ATTACHMENTS FOR GAS-BURNERS.

Specification forming part of Letters Patent No. **204,286**, dated May 28, 1878; application filed May 1, 1878.

To all whom it may concern:

Be it known that I, WILLIAM W. BATCHELDER, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Scintillating Attachments for Gas-Burners, of which the following is a specification:

This invention relates to an improved attachment for gas-burners; its object being to furnish an economical, safe, and effective device, which may be automatically operated by the act of turning on the gas to ignite it, thus dispensing with the danger attendant upon the use of matches.

My invention consists in the combination, in a suitable casing, of two or more separate substances or compounds which will not explode when separated, but will burn violently or explode when mixed or brought in contact with each other and rubbed or otherwise mechanically acted upon; a suitable device for accomplishing such mixing or ignition of said compounds, and a gas-burner provided with a pawl and double cams adapted to automatically operate said devices, whereby, when the substances are ignited, the flash or flame will ignite the gas escaping from the burner.

Further, in an arrangement of devices by means of which, when the gas-cock is turned, the igniting devices above referred to are operated, and the flash produced simultaneously with the turning on of the gas.

Further, in a combination and arrangement of devices, in connection with the casing and igniting substances above referred to, whereby the mechanism for advancing and firing said substances may be operated independently of the gas-cock.

Also, in certain devices auxiliary to the proper adjustment and operation of the mechanisms above referred to, and which will be hereinafter particularly described.

In the drawing, Figure 1 represents an elevation of a gas-burner, showing my attachment in position. Fig. 2 represents a top view thereof. Fig. 3 represents a vertical section of the device detached. Fig. 4 represents a transverse section of the device detached, and Fig. 5 represents a bottom view of the device detached.

The letter A represents the gas-burner, which may be of any approved construction; and B, the stop-cock thereof. C represents my improved attachment, which consists of a metallic casing provided with a laterally-extending attachment, D, by which it is secured to the nipple of the burner, which may be elongated to better adapt it to the purpose, the said casing provided with two parallel chambers, F F, for the reception of the igniting substances; and G, an adjacent chamber, having journaled longitudinally within it a leading-screw, H, which is provided with a transversing-nut, K, having lateral branches extending into the chambers F F through longitudinal slots between the chambers, and forming followers *k k*, which travel in their respective chambers and serve to eject the substances therefrom in the infinitesmal quantities required. The lower journal of said screw projects beyond the bottom of the casing and has mounted on it a ratchet-wheel, L, and a milled head, M, below it.

The letter N represents a vertical shaft passing longitudinally through a cylindrical chamber, O, formed in the casing. Within said chamber O is located a helical spring, P, which surrounds the shaft, the upper end of said spring being secured to the shell and the lower end to a ratcheted nut, R, mounted loosely on the shaft, the teeth of which are adapted to engage a series of similar teeth on a ratcheted nut, S, rigidly secured to said shaft.

The object of this arrangement is to enable the tension of the spring to be regulated, which is accomplished by rotating the movable nut, so as to change its position relatively to that of the stationary nut, by means of a tool inserted in a slot, *s*, in the casing for the purpose, the respective ratchets serving to hold the two nuts together in whatever positions they may occupy with respect to each other.

The lower end of the shaft N is provided with a curved arm, S', which is provided with a pawl, T, pivoted to said arm, and a spring, V, secured to the arm and bearing on the pawl, so as to throw the pawl into engagement with the ratchet on the screw, and advance the ratchet as said pawl travels in one direction, and slip back thereon when it is traveling in the opposite direction, and thus

rotate the screw to advance the substances in the chamber at each movement of said arm.

The upper end of the shaft is provided with an arm, A′, which traverses back and forth as the shaft oscillates over the open ends of the chamber F F, and the substances projecting therefrom, so as to rub off the substances from one and carry it into frictional contact with the other, and thus produce the ignition.

The arm S^1 is provided with an extension, S^2, by means of which it can be operated independently of the stop-cock.

The stop-cock of the burner is provided with cams B′ on opposite sides, which serve to engage and trip the arm S^1 and oscillating shaft N automatically, when the gas is turned on.

The substances employed to produce ignition are inexplosive in themselves, but when combined and rubbed together produce ignition. They are put up in the form of cylindrical sticks of suitable length and diameter, one being composed of chlorate of potash or equivalent material, with sufficient clay to enable it to retain its form, and the other of amorphous phosphorus and clay.

The sticks are preferably arranged in their respective chambers so that the oscillating arm will act first on the chlorate-of-potash stick, and remove and convey the exposed portion of the same to the exposed portion of the phosphorus stick; but the order of arrangement is not absolutely necessary, and may be reversed and good results be obtained.

The operation of my invention is as follows: Upon turning the cock to let on the gas, the cam thereon throws back the arm S′, throwing the pawl thereon into engagement with a tooth of the ratchet-wheel on the screw, rotating the screw slightly, so as to advance and project the substances slightly from their respective chambers. After the cam has passed the arm and released it the spiral spring on the shaft N throws it suddenly back, traversing the arm on its upper end across the projecting sticks in the chambers F F, bringing the two substances into frictional contact, igniting them, and lighting the gas. The followers are retracted to insert fresh sticks by turning the screw in a reverse direction by means of the milled head on its end.

I claim—

1. The combination, in a suitable casing, of two or more separate substances or compounds which will not explode when separate, but will burn violently or explode when mixed or brought in contact with each other and rubbed or otherwise mechanically acted upon, and a suitable device for accomplishing such mixing or ignition of said compounds, with a gas-burner provided with a pawl and double cams adapted to automatically operate the arm on the lower end of the oscillating shaft, whereby, when the substances are ignited, the flash or flame will ignite the gas, substantially as set forth.

2. In combination with the arm on the lower end of the oscillating shaft, the cam or cams on the gas-cock, whereby the igniter will be automatically operated to ignite the gas when the cock is rotated to turn on the gas, substantially as specified.

3. The combination, with the curved arm on the lower part of the oscillating shaft, its pawl, and the ratchet-wheel, of an extension on said arm, whereby the advancing and firing mechanism may be operated independently of the gas-cock, substantially as set forth.

4. In combination with the oscillating shaft and the spring, the ratcheted nut loosely fitted thereon, and secured to the spring, and the correspondingly-ratcheted nut rigidly secured to said shaft, whereby provision is made for tightening the spring, substantially as specified.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

W. W. BATCHELDER.

Witnesses:

JAMES L. NORRIS,

JAMES A. RUTHERFORD.